CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO. 93-155
NPDES PERMIT NO. CA0038636

REISSUING WASTE DISCHARGE REQUIREMENTS FOR:

EAST BAY REGIONAL PARK DISTRICT,
EAST BAY DISCHARGERS AUTHORITY, AND
UNION SANITARY DISTRICT
HAYWARD SHORELINE MARSH
HAYWARD, ALAMEDA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. East Bay Dischargers Authority (EBDA) and Union Sanitary District (USD) (hereinafter collectively called the producers), and East Bay Regional Park District (EBRPD) (hereinafter called the discharger) submitted a joint Report of Waste Discharge dated April 5, 1993 for reissuance of waste discharge requirements and a permit to discharge wastewater to waters of the State and the United States under the National Pollutant Discharge Elimination System (NPDES).

2. This discharge is presently governed by Waste Discharge Requirements in Order No. 88-138, adopted by the Board on September 21, 1988.

3. The discharger presently operates a 145-acre man-made marsh system including three freshwater marsh basins (85 acres) and two brackish water basins (60 acres) at Hayward Shoreline Regional Park, adjacent to the San Francisco Bay. The hydraulic capacity of the marsh system is about 20 million gallons per day (MGD). Routine operation of the marsh utilizes approximately 5 million gallons per day (MGD) of reclaimed secondary treated wastewater diverted from the adjacent EBDA discharge line as the freshwater influent sources. At the point of diversion, reclaimed wastewater is supplied by the Union Sanitary District, a member agency of EBDA. Storm runoff also enters into the brackish water basins of the marsh system.

4. After mixing with Bay water in the brackish water basins, the reclaimed wastewater from the marsh system is discharged directly into the Lower San Francisco Bay (Latitude 37 Deg. 37 Min. 32 Sec.; Longitude 122 Deg. 07 Min. 50 Sec.) through an earthen channel. Attachment A is a location map and is hereby made a part of this Order.

5. The marsh system is operated to enhance the beneficial uses of reclaimed wastewater, to derive net environmental

benefits and to meet water quality objectives, and as a research site to better understand development and management of a marsh utilizing reclaimed wastewater.

6. The State Water Resources Control Board (State Board) adopted the California Enclosed Bay and Estuaries and the California Surface Waters Plans on April 11, 1991. These plans establish water quality objectives for all enclosed bays, estuaries and inland surface waters in the state, and a strategy for implementation of the objectives. These plans were amended by the State Board on November 19, 1992.

7. The Board amended its Water Quality Control Plan (Basin Plan) for the San Francisco Bay Region on September 16, 1992, and the State Board approved it on April 27, 1993. The Board amended the Basin Plan on October 21, 1992 to adopt a site-specific water quality objective of 4.9 μg/l for copper for San Francisco Bay. The Basin Plan identifies beneficial uses and water quality objectives for surface waters in the region, as well as effluent limitations and discharge prohibitions intended to protect beneficial uses.

8. The Board amended the Basin Plan on June 16, 1993 to adopt a wasteload allocation for copper (Resolution 93-61). The provisions of this permit are consistent with the Basin Plan amendments adopted by the Regional Board. The State Board has not approved the Basin Plan amendments of October 1992 and June 1993 as of the date of this permit. These amendments are included in this permit based on best professional judgement and staff evaluation of the presentations at the October 1992 and June 1992 Board meetings. Specifically, the site-specific objective for copper is included based on the Regional Board study that employed the "water effect ratio" approach developed by the EPA.

9. This Order implements the plans, polices and provisions of the Board's Basin Plan and the State Board's California Enclosed Bays and Estuaries Plan.

10. The Basin Plan contains water quality objectives and beneficial uses for the Lower San Francisco Bay and contiguous water bodies. The Beneficial uses of the Lower San Francisco Bay and contiguous water bodies are as follows:

    - Industrial Service Supply
    - Navigation
    - Water Contact Recreation
    - Non-contact Water Recreation
    - Ocean Commercial and Sport Fishing
    - Wildlife Habitat
    - Preservation of Rare and Endangered Species
    - Fish Migration
    - Fish Spawning

- Shellfish Harvesting
- Estuarine Habitat

11. The Basin Plan prohibits the discharge of wastewater which has characteristics of concern to beneficial uses at any point at which the wastewater does not receive a minimum initial dilution of at least 10:1, or into any non-tidal water, dead-end slough, similar confined waters, or any immediate tributaries thereof.

12. The Basin Plan states that exception to the above prohibition will be considered for dischargers where discharge is approved as a part of a reclamation project, or it can be demonstrated that net environmental benefits will be derived as a result of the discharge.

13. The Board also finds that an exception to the discharge prohibition is warranted for the wetlands enhancement project (where water may be released on a year round basis as necessary for maintenance of the wetlands), as it was developed as part of the reclamation project and will provide for enhancement of wetlands habitat.

    13.1 The marsh will be operated to enhance beneficial uses of reclaimed water, and as such qualifies for Board consideration of an exception to the discharge prohibitions stated in Finding 11 above. The diversion of 5 mgd of treatment effluent to an alternative discharge point does not allow an increase in the capacity of the plant.

    13.2 The Board adopted Resolution 77-1 specifically establishing its Policy regarding the use of wastewater to create, restore, maintain, and enhance marsh lands. The policy also specifies the criteria under which it would consider exceptions to the Basin Plan for marshes. In conformance with the Policy, the discharger submitted a technical report, the "Hayward Marsh Expansion Management Plan". The discharger will periodically measure metals in the waters and sediments of the marsh. As vegetation and animals in the marsh ecosystem increase, additional studies to monitor the health of the marsh will be conducted.

    13.3 The California Department of Health Services (DOHS) guidelines require that the discharge to the marsh should not exceed a median coliform limit of 23 MPN/100ml to protect public health.

    The discharger proposed a plan to DOHS to restrict public access to the marsh to allow for consideration of a higher a coliform limit. DOHS reviewed and concurred, by a letter of January 27, 1983, with the discharger's proposal (with additional recommended restrictions) and found that a median effluent

coliform limit of 240 MPN/100ml to the marsh would be adequate to protect public health. DOHS concurrence also includes the provision that the coliform limit be subject to review if shellfish harvesting is proposed and considered in nearby waters.

14. The revised Basin Plan allows for distinction between effluent limitations that are met by current performance, and effluent limitations not currently attained. Immediate compliance is required for effluent limits that are met by current performance. A longer compliance time schedule will be permitted for effluent limits that are not currently attained if the discharger participates in an aggressive source control program. Implementation of source control measures to reduce pollutant loadings to the maximum extent practicable shall be completed as soon as possible, but no later than December 15, 1998.

15. A review of the discharger's effluent monitoring data indicated that the discharger will be able to comply with the revised Basin Plan shallow water effluent limits for arsenic, cadmium, chromium, lead, selenium, silver, zinc, and phenols. The data further indicates that the discharger will not be able to comply with the shallow water limits for copper, mercury, nickel, and Poly-aromatic hydrocarbons (PAHs). The discharger's ability to comply with the remaining organic constituent limits cannot be predicted due to detection limit problems or insufficient data. Based on available monitoring data, this Order implements the Basin Plan as follows:

    15.1 Requires immediate compliance for effluent limitations that are met by current performance (arsenic, cadmium, chromium, lead, selenium, silver, zinc and phenols).

    15.2 Sets interim limits in effect from December 15, 1993 to December 15, 1998 for effluent limitations that are not met by current performance (copper, nickel, mercury, cyanide, and PAHs).

    15.3 Sets the final cyanide permit limit at 5 μg/l. The Statewide plan does not currently contain a cyanide limit. 5 μg/l is the limit currently being proposed in the revised Basin Plan. If the Statewide Plan or Basin Plan adopts a limit significantly different from 5 μg/l, this new limit will be incorporated into the permit by amendment.

16. The 1986 Basin Plan initiated the Effluent Toxicity Characterization Program (ETCP) in which dischargers were required to monitor their effluent using critical life stage toxicity tests to generate information on toxicity test species sensitivity and effluent variability to allow development of appropriate chronic toxicity effluent limitations. The 1991 State Board Enclosed Bays and

Estuaries Plan (EBEP) established an ambient water quality objective outside discharge mixing zones of no chronic toxicity, expressed as an objective of 1 TUc (chronic toxicity unit). It also required that public-owned treatment works with a pretreatment program must have a chronic toxicity effluent limitation.

A review of the discharger's effluent monitoring data has indicated that virtually no fish survive in the monthly acute toxicity tests. Extensive study of USD wastewater has identified ammonia as the source of toxicity. The Hayward Marsh Improvement Program (HMIP) is being implemented by USD to reduce ammonia and chlorine toxicity at the marsh. The full benefit of HMIP will likely require several years to develop, since ammonia reduction is partially dependent on plant growth in the marsh. Until ammonia toxicity is controlled by the fully implemented HMIP (anticipated, September 1, 1996), chronic toxicity testing would not provide useful information that would not also be provided by acute toxicity testing. Therefore, USD is not required to participate in the ETCP until September 1, 1996. The final report documenting the results of the effluent toxicity characterization study should be submitted by USD no later than October 1, 1998. The chronic toxicity limit for this discharge will be effective from December 15, 1998.

17. USD has implemented and is maintaining an USEPA approved pretreatment program in accordance with Federal pretreatment regulations (40 CFR 403) and this Board's Order No. 89-179.

18. This Order serves as an NPDES Permit, adoption of which is exempt from the provisions of Chapter 3 (commencing with Section 21000) of Division 13 of the Public Resources Code [California Environmental Quality Act (CEQA)] pursuant to Section 13389 of the California Water Code.

19. The discharger has adopted a Conditional (Mitigated) Negative Declaration for this project in accordance with the California Environmental Quality Act (CEQA). Significant water quality impacts identified in the Negative Declaration determined that the project would destroy a seasonal wetland, but it would be mitigated by the project's creation of a year-round marsh operated to create and enhance both fresh and brackish marsh habitat and vegetation.

20. The producers, the discharger and interested agencies and persons have been notified of the Board's intent to reissue requirements for the existing discharge and have been provided an opportunity to submit their written views and recommendations.

21. The Board, in a public meeting, heard and considered all comments pertaining to the discharge.

IT IS HEREBY ORDERED, pursuant to the provisions of Division 7 of the California Water Code and regulations adopted thereunder, and to the provisions of the Clean Water Act and regulations and guidelines adopted thereunder, that the producers and the discharger shall comply with the following:

A. Discharge Prohibitions:

1. Discharge of treated wastewater at a location or in a manner different from that described in Findings No. 3 and 4 is prohibited.

2. The average dry weather flow discharge shall not exceed 7 mgd without the written approval of the Executive Officer. The average dry weather flow shall be determined over three consecutive dry weather months each year.

3. Neither the treatment, nor the discharge of reclaimed wastewater nor the management of the Marsh shall create a nuisance as defined in Section 13050 (m) of the California Water Code.

B. Effluent Limitations:

1. The discharge of reclaimed wastewater to the marsh[1] that does not meet the following limits is prohibited:

Constituent	Units	Monthly Average	Weekly Average	Daily Maximum	Instantaneous Maximum
a. 5-day BOD	mg/l	30	45	-	-
b. Suspended Solids	mg/l	30	45	-	-
c. Oil & Grease	mg/l	10	-	20	-
d. Settleable Matter	ml/l-hr	0.1	-	-	0.2
e. Chlorine Residual	mg/l				0.0

f. The effluent shall not exceed a median Most Probable Number (MPN) for total coliform organisms of 240/100 ml, nor a maximum of 10,000/100 ml, as determined from the results of the previous consecutive five (5) days for which analysis have been completed.

g. The discharge shall not have pH of less than 6.5 nor greater than 8.5.

Notes:
1. For all the items listed, with exception of item e., the producers and/or discharger may demonstrate compliance with these requirements at USD's discharge to the EBDA outfall interceptor, or at a point agreeable to the Executive Officer. For item e., compliance shall be determined at the outlet of Basin 1 until January 1, 1995, and at the inlet of Basin 1 thereafter.

2. Effluent Toxicity:

2.1 Acute Toxicity:

The survival of organisms in undiluted effluent shall be an 11-sample median value of not less than 90 percent survival, and a 90 percentile value of not less than 70 percent survival. The 11-sample median and 90th percentile effluent limitations are defined as follows.

11-sample median: If five or more of the past ten or fewer samples show less than 90 percent survival, then survival of less than 90 percent on the next sample represents a violation of the effluent limit.

90th percentile: If one of the past ten or fewer samples show less than 70 percent survival, then survival of less than 70 percent on the next sample represents a violation of the effluent limitation.

2.2 Chronic Toxicity: To be in effect after December 15, 1998.

There shall be no chronic toxicity in the effluent, above the levels defined by:

a. an eleven sample median value[1] of 1 TUc[2]; or

b. a 90 percentile value[3] of 2 TUc[2].

Notes:

1 A test sample showing chronic toxicity greater than 1 TUc represents consistent toxicity and a violation of this limitation, if five or more of the past ten or less tests show toxicity greater than 1 TUc.

2 A TUc equals 100/NOEL. The NOEL is the no observable effect level, determined from IC, EC, or NOEC values. These terms and their usage in determining compliance with the limitations are defined in Attachment D of this Order. The NOEL shall be based on a critical life stage test using the most sensitive test species as specified by the Executive Officer. The Executive Officer may specify two compliance species if test data indicate that there is alternating sensitivity between the two species. If two compliance test species are specified, compliance shall be based on the maximum TUc value for that discharge sample

based on a comparison of TUc values obtained through concurrent testing of the two species.

3 A test sample showing chronic toxicity greater than 2 TUc represents consistent toxicity and a violation of this limitation if one or more of the past ten or less samples shows toxicity greater than 2 TUc.

3. Concentration Limits for Toxic Pollutants: The effluent shall not exceed the following limits (a)(f)(h): (see Table 1 footnotes):

Table 1
(All limits in µg/l)

	Constituent	Final Limits Monthly Average (b)	Final Limits Daily Average (b)	Interim Limits 12/15/93-12/15/98 Daily Average (b)
1.	Arsenic		36	
2.	Cadmium		9.3	
3.	Copper		4.9	35
4.	Chromium (VI)(c)		50	
5.	Lead (g)		5.6	
6.	Mercury		0.025	0.3
7.	Nickel (g)		8.3	14
8.	Selenium (g)		5	
9.	Silver		2.3	
10.	Zinc (g)		86	
11.	Aldrin	0.0001		
12.	A-BHC	0.01		
13.	B-BHC	0.05		
14.	Chlordane	0.0001	0.004	
15.	Cyanide (e)		5	20
16.	DDT (d)	0.0006	0.001	
17.	Dieldrin	0.0001	0.002	
18.	Endosulfan (d)		0.009	
19.	Endrin (d)		0.002	
20.	Heptachlor	0.0002	0.004	
21.	Heptachlor Epoxide	0.0001		
22.	Hexachlorobenzene	0.0007		
23.	PAHs (d)	0.03	15	15
24.	PCBs (Total)(d)	0.0001	0.03	
25.	Phenol	30		
26.	TCDD Equivalents (d)	1E-08		
27.	Toxaphene (g)	0.0007	0.0002	
28.	Tributyltin	0.005	0.01	

Footnotes:

a. These limits are based on marine water quality objectives, and are intended to be achieved through secondary treatment and, as necessary, pretreatment and source control.

b. Limits apply to the average concentration of all samples collected during the averaging period (Daily - 24-hour period; Monthly - Calendar month).

c. The discharger may meet this limit as total chromium.

d. See California Enclosed Bays and Estuaries Plan, April 1991, Definition of terms.

e. The discharger may demonstrate compliance with this limitation by measurement of weak acid dissociable cyanide.
f. All analysis shall be performed using current USEPA Methods, as specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", SW-846, Third Edition. Detection limits, practical quantitative levels, and limits of quantitative will be taken into account in determining compliance with effluent limitations.
g. Effluent limitation may be met as a 4-day average. If compliance is to be determined based on a 4-day average, then concentrations of 24-hour composite samples shall be reported, as well as the average four.
h. For all the constituents listed above, the producers and/or discharger may demonstrate compliance with these requirements at the USD's discharge to the EBDA's outfall interceptor, or at a point agreeable to the Executive Officer.

C. **Marsh and Bay Receiving Water Limitations:**

1. The discharger shall provide sufficient circulation through the marsh to maintain the following limits of quality as shown:

Marsh and Bay

a. No visible, floating, suspended, or deposited oil or other products of petroleum origin;

b. No floating, suspended, or deposited macroscopic particulate matter or foam of sewage origin;

c. No bottom deposits or aquatic growths to the extent that such deposits or growths cause nuisance or adversely affect beneficial uses;

d. No toxic or other deleterious substances to be present in concentrations or quantities which will cause deleterious effects on aquatic biota, wildlife, or waterfowl, or which render any of these unfit for human consumption, either at levels created in the receiving waters or as a result of biological concentration.

e. Un-ionized Ammonia — 0.025 mg/l as N (annual median)
0.4 mg/l as N (maximum)

Bay Only

f. Dissolved Oxygen — 5.0 mg/l minimum.

The median dissolved oxygen concentration for any three consecutive months shall not be less than 80% of the

dissolved oxygen content at saturation. When natural factors cause concentrations less than that specified above, then the discharge shall not cause further reduction in ambient of dissolved oxygen concentrations.

g.	Dissolved Sulfide	0.1 mg/l, maximum
h.	pH	Variation from natural ambient pH by more than 0.5 pH units
i.	Nutrients	Waters shall not contain biostimulatory substances in concentrations that promote aquatic growths to the extent that such growths cause nuisance or adversely affect beneficial uses.

2. The discharge shall not cause a violation of any applicable water quality standard for receiving waters adopted by the Board or the State Water Resources Control Board as required by the Clean Water Act and regulations adopted thereunder. If more stringent applicable water quality standards are promulgated or approved pursuant to Section 303 of the Clean Water Act, or amendments thereto, the Board will revise and modify this Order accordingly.

D. Provisions

1. Requirements prescribed by this Order supersede the requirements prescribed by Order No. 88-138. Order No. 88-138 is hereby rescinded.

2. The producers and discharger shall comply with all sections of this Order immediately upon adoption.

3. **Compliance with Acute Toxicity Effluent Limitation**

   a. Compliance with Effluent Limitation B.2.1 (Acute Toxicity) of this Order shall be evaluated by measuring survival of test species exposed to undiluted effluent for 96 hours in either static renewal or flow through bioassays. Each fish species represents a single bioassay.

   b. Two fish species will be tested concurrently. These shall be the most sensitive species determined from a single screening (all tests must be completed within ten days of initiating the first test) of thirteen species: three spine stickleback, rainbow trout, fathead minnow, alga (Skeletonema costatum or Thalassiosira pseudonana), red alga, giant kelp, abalone, bivalve larva (oyster or mussel), Echinoderma (urchins or sand dollar), shrimp, silversides, water flea, and alga (Selenastrum

capricornutum). The screening requirement can be met using either flow through or static renewal bioassays. The Board may consider allowing compliance monitoring with only one (the most sensitive, if known) fish species, if the following condition is met:

1) The discharger can document that the acute toxicity limitation, specified above, has not been exceeded during the previous three years, or that acute toxicity has been observed in only one of two fish species.

c. All bioassays shall be performed according to protocols approved by the USEPA or State Board, or published by the American Society for Testing and Materials (ASTM) or American Public Health Association.

d. The discharger shall submit a proposed time schedule for compliance with the above described requirements by September 1, 1996.

4. **Effluent Toxicity Characterization Program**

The producers and/or discharger shall participate in the Effluent Toxicity Characterization Program (ETCP). The "Modified Guidelines for the Effluent Toxicity Characterization Program", dated September 1991 should be followed to characterize marsh effluent.

The producers and/or discharger shall complete the following tasks according to the specified compliance schedules:

Program Requirements	**Deadline**
<u>QA/QC Round</u>	
a) Notify Regional Board of intent to participate	September 1, 1996
b) Initiate Testing	October 1, 1996
c) Submit Results	November 1, 1996
<u>Screening Phase</u>	
a) Submit Study Plan	December 1, 1996
b) Initiate Testing	February 1, 1997
c) Submit Final Report	May 1, 1997
<u>Variability Phase</u>	
a) Submit Study Plan	May 1, 1997
b) Initiate Testing	July 1, 1997

c) Submit Interim Report	January 1, 1998
d) Final Report	October 1, 1998

5. **Compliance with Chronic Toxicity Effluent Limitation**

   a. If the ETCP demonstrates exceedance of the chronic toxicity effluent limitation, the discharger shall conduct a chronic toxicity reduction evaluation (TRE), which shall initially involve a toxicity identification evaluation (TIE). The TIE shall be in accordance with a work plan acceptable to the Executive Officer. The TIE shall be to identify the chemical or combination of chemicals that are causing the observed toxicity. Every effort using currently available TIE methodologies shall be employed by the discharger. As toxic constituents are identified or characterized, the discharger shall continue the TRE by determining the sources(s) of the toxic constituent(s) from the discharge. All reasonable steps shall taken to reduce toxicity to the required level. The Board recognizes that identification of causes of chronic toxicity may not be successful in all cases. Consideration of enforcement action by the Board will be based in part on the discharger's actions in identifying and reducing sources of constant toxicity.

6. **Compliance With Toxic Substances Limitations**

   a. The discharger shall comply with effluent limitations specified in Effluent Limitations B.3 immediately upon adoption of this Order.

   b. The discharger shall initiate a monitoring program using appropriate USEPA methods and detection limits, to evaluate the compliance status for all constituents listed in Effluent Limitations in B.3. Monitoring for metals, cyanide, phenols, and PAHs shall be performed monthly during all periods of surface water discharge. For all other constituents listed in B.3, initial monitoring shall be performed for three consecutive wet months beginning with January, 1994, and three consecutive dry months beginning with July, 1994.

7. The producers or discharger shall submit, by October 31, 1994, a technical report acceptable to the Executive Officer summarizing the results of the monitoring done pursuant to Provision D.6 above. This report shall include an evaluation of compliance with the effluent limitations for each constituent and recommendations for future monitoring of the constituents.

   If the monitoring results document that the effluent cannot meet the limits, discharger may petition for

interim limits and longer compliance periods. This petition must be based on the planning and implementation of an aggressive pollution prevention program.

In accordance with this requirement the producers shall implement the actions described below:

Pollution Prevention Program

a. The producers shall continue to participate in the Pollution Prevention Program (previously known as the Waste Minimization Program) as described in the Basin Plan, Chapter IV, Waste Minimization Section.

b. The producers shall continue to implement and expand its existing Pollution Prevention Program in order to reduce the pollutant loadings to the treatment plant and, subsequently, to the receiving waters. The producers shall focus on copper, mercury, nickel, cyanide, PAHs, and all other constituents found to be in non compliance with Basin Plan Table IV-1A limits. The producers shall continue to submit semi-annual reports that include (1) documentation of its efforts and progress, (2) evaluation of the program's accomplishments, and (3) identify specific tasks and establish time schedules for future efforts. Reports, acceptable to the Executive Officer, shall be submitted by January 1st and July 1st, of each year. One of these reports shall be a comprehensive document; the other shall be a short progress report. Duplicate copies shall be provided.

c. The producers shall complete implementation of the source reduction plan in order to reduce pollutant loading to the maximum extent possible for the purpose of achieving compliance with the final effluent limitations as specified in B.3., by December 15, 1998.

8. The producers and discharger shall develop a plan for evaluating impacts of mercury on wildlife based on monitoring of appropriate animal and/or plant tissue. This plan shall be submitted for approval by the executive officer by February 1, 1994. It is expected that the monitoring of mercury will begin during spring of 1994. In the event that mercury is found to be at levels of concern, appropriate remediation measures shall be identified and implemented.

9. The producers and discharger shall comply with the attached Self-Monitoring Program. The Executive Officer may make minor amendments to it pursuant to federal regulations (40 CFR 122.63).

10. The discharger shall comply with all applicable items of the attached "Standard Provisions and Reporting Requirements" dated August 1993.

11. The Board expects the discharger to operate and maintain the Marsh without chemical treatment (i.e., herbicides and algaecides) and to implement all feasible measures prior to using chemical treatment. If chemical treatment is proposed by the discharger, then such treatment shall be in accordance with the provisions of the Basin Plan.

12. The discharger shall review, and update as necessary, its **Marsh Management Plan**, annually, or within 90 days of completion of any significant facility or process changes. The discharger shall submit to the Board, by **April 15** of each year, a letter describing the results of the review process including an estimated time schedule for completion of any revisions determined necessary, and a description or copy of any completed revisions.

13. The producer and the discharger shall implement the following approved programs/plans: (a) a Marsh Contingency Operations Plan for the protection of marsh and Bay during contingency operations (e.g., assurances that only secondary treated wastewater enters the marsh at proper coliform levels, for operations during periods when secondary treated wastewater can not be discharged to the marsh, etc.), (b) a program to minimize public contact with the reclaimed wastewater, and (c) a special receiving water monitoring plan and program to assess impacts on nearshore biota (ref. State Department of Fish and Game letter of January 24, 1983). A copy shall also be sent to State Department of Health Services.

    Annually, the discharger shall review and update as necessary, its **Marsh Contingency Plan.** The discharge of pollutants in violation of this Order where the discharger has failed to develop and/or adequately implement a contingency plan will be the basis for considering such discharge a willful and negligent violation of this Order pursuant to Section 13387 of the California Water Code. Plan revisions, or a letter stating that no changes are needed, shall be submitted to the Board by **April 15** of each year.

14. For purposes of enforcement of these requirements the Board will consider the discharger to have the primary responsibility for the operation of the marsh to meet water quality objectives and prevention of nuisance and the producers to be responsible for supplying treated reclaimed wastewater as specified in Effluent Limitations B. (excluding B.1.e.). The dechlorination basin (Basin 1), Basin 2A, and Basin 2B is not to be

considered waters of the state but as part of the treatment process under the responsibility of the discharger.

Basins 1, 2A, and 2B, which are designated solely as part of the treatment process can not become "attractive nuisances" for wildlife. The discharger is required to employ best management practices in order to avoid harming the wildlife which frequent these basins.

15. The Board may modify, or revoke and reissue, this Order and Permit if present or future investigations demonstrate that the discharge governed by this Order is causing or significantly contributing to adverse impacts on water quality and/or beneficial uses of receiving waters.

16. This Order expires on December 15, 1998. The producers and discharger must file a report of waste discharge in accordance with Title 23, Division 3, Chapter 9 of the California Code of Regulations not later than 180 days before this expiration date as application for reissuance of waste discharge requirements.

17. This Order shall serve as a National Pollutant Discharge Elimination System (NPDES) Permit pursuant to Section 402 of the Clean Water Act or amendments thereto, and shall become effective 10 days after the date of its adoption provided the Regional Administrator, Environmental Protection Agency, has no objection. If the Regional Administrator objects to its issuance, the permit shall not become effective until such objection is withdrawn.

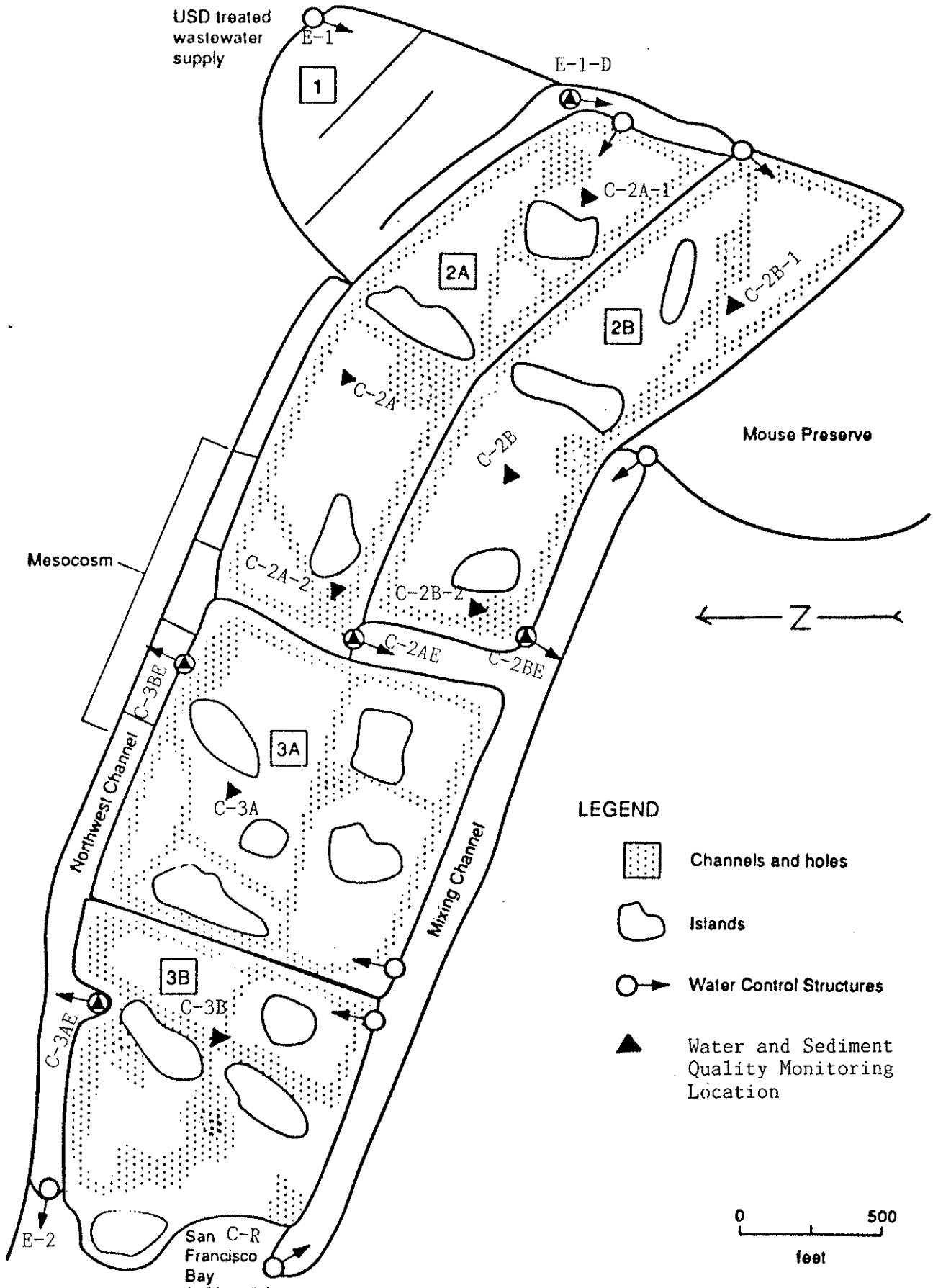
I, Steven R. Ritchie, Executive Officer do hereby certify the foregoing is a full, true and correct copy of an Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on December 15, 1993.

STEVEN R. RITCHIE
Executive Officer

Attachments:

A. Location Map
B. Summary of Report Due Dates/Deadlines
C. Self-Monitoring Program
D. Chronic Toxicity Definitions/Phase Monitoring
E. Marsh Policy 77-1
F. Standard Provisions & Reporting Requirements, August 1993

ATTACHMENT A



HAYWARD SHORELINE MARSH
LOCATION MAP

ATTACHMENT B

ATTACHMENT B

SUMMARY OF REPORT DUE DATES AND ACTION DEADLINES

DUE DATE TO BOARD	NAME OF REPORT/ACTION	REFERENCE
A. ANNUAL REPORTS		
April 15	Marsh Management Plan	D.12
April 15	Marsh Contingency Plan	D.13
B. SEMI-ANNUAL REPORTS		
Jan 1 and July 1	Pollution Prevention Program	D.7
C. SPECIFIC REPORT/ACTION DEADLINES		
February 1, 1994	Tissue Monitoring	D.8
Sept. 1, 1996	Acute Toxicity Time Schedule	D.3
Nov. 17, 1998	Toxic Substances	D.6,7
October 1, 1998	ETCP	D.4

ATTACHMENT C

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

SELF-MONITORING PROGRAM

FOR

EAST BAY REGIONAL PARK DISTRICT,
EAST BAY DISCHARGERS AUTHORITY,
UNION SANITARY DISTRICT
HAYWARD SHORELINE MARSH

NPDES PERMIT NO. CA 0038636

ORDER NO. 93-155

CONSISTS OF

PART A

AND

PART B

PART B

I. DESCRIPTION OF SAMPLING STATIONS

A. INFLUENT AND EFFLUENT

Station	Description
E-1	At any point in the outfall from the producers' treatment facilities between the point of discharge and the point at which all waste tributary to that outfall is present (see attached Location Map).
E-2	Located at the marsh discharge point, and consisting entirely of discharge from the marsh.

B. MARSH WATERS

Station	Description
E-1-D, C-2A, C-2B, C-3A, C-3B, C-2AE, C-2BE	As specified in Location Map (attached)

C. MARSH SEDIMENTS

Station	Description
C-2A-1, C-2A-2, C-2B-1, C-2B-2, C-3A, C-3B	As specified in Location Map (attached)

D. RECEIVING WATERS

Station	Description
C-R	At a point in Lower San Francisco Bay satisfactory to the Executive Officer that is representative of Lower San Francisco Bay where the marsh discharges.
C-R-B	At a point in Lower San Francisco Bay, satisfactory to the Executive Officer, that is representative of the portion of the Lower San Francisco Bay which is not being affected by the Marsh discharge.

E. LAND OBSERVATIONS

Station	Description
L-1 through L-"n"	Located along the perimeter levee at equidistant intervals not to exceed 500 feet. (A sketch showing locations of these stations shall accompany each report)

II. CHRONIC TOXICITY MONITORING REQUIREMENT

A. Test Species and Frequency: The discharger shall collect 24-hour composite sample of the treatment plant effluent at the compliance point station specified in the Self-Monitoring Program, for critical life stage toxicity testing in accordance with the attached Table 1. For toxicity tests requiring renewals, 24-hour composite samples collected on consecutive days are required.

B. Methodology: Sample collection, handling and preservation shall be in accordance with EPA protocols. The test methodology used shall be in accordance with the references cited in Order No. 92-104, or as approved by the Executive Officer. A concurrent reference toxicant test shall be performed for each test.

C. Dilution Series: The discharger shall conduct tests at 100%, 75%, 50%, 25%, and 12.5%. The "%" represents percent effluent as discharged.

III. CHRONIC TOXICITY REPORTING REQUIREMENTS

A. Routine Reporting: Toxicity test results for the current reporting period shall include at a minimum, for each test

1. sample date(s)
2. test initiation date
3. test species
4. end point values for each dilution (e.g. number of young, growth rate, percent survival)
5. NOEC value(s) in percent effluent
6. IC_{15}, IC_{25}, IC_{40}, and IC_{50} values (or EC_{15}, EC_{25} ... etc.) in percent effluent
7. TUc values (100/NOEC, $100/IC_{25}$, and $100/EC_{25}$)
8. Mean percent mortality (±s.d.) after 96 hours in 100% effluent (if applicable)
9. NOEC and LOEC values for reference toxicant test(s)
10. IC_{50} or EC_{50} value(s) for reference toxicant test(s)

11. Available water quality measurements for each test (e.g. pH, D.O, temperature, conductivity, hardness, salinity, ammonia)

B. Compliance Summary: Each self-monitoring report shall include a summary table of chronic toxicity data from at least eleven of the most recent samples. The information in the table shall include the items listed above under Section A item numbers 1, 3, 5, 6(IC_{25} or EC_{25}), 7, and 8.

C. Reporting Raw Data in Electronic Format: On a quarterly basis, by February 15, May 15, August 15, and December 15 of each year, the producers shall report all chronic toxicity data for the previous calendar quarter in the format specified by the Statewide Chronic Toxicity Database Management System.

IV. SCHEDULE OF SAMPLING, ANALYSIS AND OBSERVATIONS

The schedule of sampling, analysis and observation shall be that given in Table 1.

V. MODIFICATION OF PART "A"

Includes the following modifications of Part A:

1. Paragraph C.5 is revised to read:

   "Average monthly values are calculated as the sum of all measured discharges by weight (measured during the specified period ie. calendar month), divided by the number of daily discharge values measured during that specified period."

2. Paragraph E.3 shall apply to the Basins with the following addition:

   (c) Special attention shall be paid to observations for vector nuisance and signs of waterfowl botulism per Marsh Management Plan.

3. Paragraph G.4 should include the following addition:

   "The producers and the discharger may file separate self-monitoring reports detailing compliance with the Order."

4. Paragraph G.5 should include the following addition:

   "The Annual Report narrative (and data as appropriate) should stress the operations of the marsh to meet with water quality objectives, enhance beneficial uses of

reclaimed wastewater, protection of off-site beneficial uses, and the net environmental benefits."

VI. REPORTING REQUIREMENTS

1. General Reporting Requirements are described in Section C of this Board's "Standard Provisions and Reporting Requirements", dated August 1993.

2. Self-Monitoring Reports for each calendar month shall be submitted monthly, by the fifteenth day of the following month. The required contents of these reports are described in Section G.4 of Part A.

3. An Annual Report for each calendar year shall be submitted to the Board by February 15th of the following year. The required contents of the annual report are described in Section G.5 of Part A.

4. Any overflow, bypass or significant non-compliance incident that may endanger health or the environment shall be reported according to the Sections G.1 and G.2 of Part A.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 93-155.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be authorized by the Executive Officer.

3. Is effective on the date shown below.

STEVEN R. RITCHIE
Executive Officer

Effective Date: 12/15/93

Attachment:
A. Table 1

reclaimed wastewater, protection of off-site beneficial uses, and the net environmental benefits."

VI. REPORTING REQUIREMENTS

1. General Reporting Requirements are described in Section C of this Board's "Standard Provisions and Reporting Requirements", dated August 1993.

2. Self-Monitoring Reports for each calendar month shall be submitted monthly, by the fifteenth day of the following month. The required contents of these reports are described in Section G.4 of Part A.

3. An Annual Report for each calendar year shall be submitted to the Board by February 15th of the following year. The required contents of the annual report are described in Section G.5 of Part A.

4. Any overflow, bypass or significant non-compliance incident that may endanger health or the environment shall be reported according to the Sections G.1 and G.2 of Part A.

I, Steven R. Ritchie, Executive Officer, hereby certify that the foregoing Self-Monitoring Program:

1. Has been developed in accordance with the procedures set forth in this Regional Board's Resolution No. 73-16 in order to obtain data and document compliance with waste discharge requirements established in Regional Board Order No. 93-XX.

2. May be reviewed at any time subsequent to the effective date upon written notice from the Executive Officer or request from the discharger, and revisions will be authorized by the Executive Officer.

3. Is effective on the date shown below.

STEVEN R. RITCHIE
Executive Officer

Effective Date: _____

Attachment:
A. Table 1

TABLE 1
SCHEDULE OF SAMPLING, MEASUREMENTS, AND ANALYSIS (2)
Hayward Shoreline Marsh

SAMPLING STATION	E-1		E-1-D	C-2AE, C-2BE			C-2A, C-2B C-3A, C-3B		E-2	C-R	C-R-B
TYPE OF SAMPLE	C-24	G	G	G	Cont.	C-24	G	C-24	G	G	G
Flow Rate (mgd)	D										
BOD, 5-day, 20 °C (mg/l & lb/day)											
Total Suspended Solids (mg/l & lb/day)		W									
Chlorine Residual (mg/l & lb/day) (3)		D									
Oil & Grease (mg/l & lb/day)											
Total Coliform (MPN/100 ml)		W									
Acute Toxicity-96 hr. (% survival)						M					
Chronic Toxicity						M					
Dissolved Oxygen (mg/l & % saturation)		W(1)	W(1)				W(1)		M(1)	M(1)	M(1)
Sulfides (mg/l if DO<5.0 mg/l)		W	W				D		M	M	M
Hardness mg/l as CaCO3	M										
pH (Units)		2/M		2/M			2/M		2/M	M	M
Ammonia Nitrogen (mg/l & lb/day)		2/M		2/M			2/M		2/M		
Nitrate Nitrogen (mg/l & lb/day)		2/M		2/M			2/M		2/M		
Temperature (°C)		W					W		W		
Arsenic (µg/l & lb/day)	M					Q					
Cadmium (µg/l & lb/day)	M					Q					
Chromium (µg/l & lb/day)	M					Q					
Copper (µg/l & lb/day)	M					Q					
Cyanide (µg/l & lb/day)	M					Q					
Lead (µg/l & lb/day)	M					Q					
Mercury (µg/l & lb/day)	M					Q					

TABLE 1 (Continued)
SCHEDULE OF SAMPLING, MEASUREMENTS, AND ANALYSIS (2)
Hayward Shoreline Marsh

SAMPLING STATION	E-1		E-1-D	C-2AE, C-2BE			C-2A, C-2B C-3A, C-3B		E-2	C-R	C-R-B
TYPE OF SAMPLE	C-24	G	G	G	Cont.	C-24	G	C-24	G	G	G
Nickel (µg/l & lb/day)	M					Q					
Selenium (µg/l & lb/day)	M					Q					
Silver (µg/l & lb/day)	M					Q					
Zinc (µg/l & lb/day)	M					Q					
Phenolic Compounds (µg/l & lb/day)	M					Q					
PAHs (µg/l & lb/day)	M					Q					
All applicable Standard Observations		W	W				W			W	
Organic Priority Pollutants (µg/l & lb/day) (4)	Y					Y					
Un-ionized Ammonia (mg/l)		2/M		2/M			2/M		2/M		
Biological Tissue Samples(5)											
Sediment Monitoring (6)											

LEGEND

TYPES OF SAMPLES

G = grab sample
C-24 = composite sample (24-hour)
Cont. = continuous sampling
O = observation

TYPES OF STATIONS

E = waste effluent stations
C = receiving water stations
L = basin and/or pond levee stations

FREQUENCY OF SAMPLING

E = each occurrence
H= once each hour
D = once each day
W = once each week
M = once each month
Y = once each year

2/H = twice per hour
2/W = 2 days per week
5/W = 5 days per week
2/M = 2 days per month
2/Y = twice per year
Q = quarterly, once each in Mar., June, Sept., & Dec.

2H = every 2 hours
2D = every two days
2W = every two weeks
2M = every two months
Cont. = continuous

NOTES FOR TABLE 1:

(1) Measures should be made at the same time each day and within an hour of dawn twice per year..

(2) If any effluent sample is in violation of limits, except those for metals, cyanide, and organics, sampling shall be increased for that parameter to at least daily or grater until compliance is demonstrated in two successive samples. Receiving water violations shall be reported in the monthly report; increased receiving water monitoring may be required. Compliance measurements represent compliance status for the time period between measurements.

(3) Chlorine residual analyzers shall be calibrated against grab samples as frequently as necessary to maintain accurate control and reliable operation. If an effluent violation is detected, grab samples shall be taken every 30 minutes until compliance is achieved.

(4) Organic priority pollutants and other constituents of the September 16, 1992 Basin Plan amendments must be monitored on a monthly basis for six months pursuant to Provision D.6. of this permit (i.e. three months wet season and three months dry season) to determine whether any of these constituents are present in excess of their corresponding effluent limits. The frequency of sampling will revert to once per year, as indicated in Table 1, for constituents that are determined to be non-detectable, with the exception of TCDD equivalents, for which the frequency of sampling will revert to once per permit reissuance. If the six months of monitoring show that concentrations of a specific pollutant are near or above its effluent limit, the Board may require sampling frequencies grater than once per year.

(5) See Provision D.8.

(6) Stations C-2A-1, C-2A-2, C-2B-1, C-2B-2, C-3A, C-3B (Location Map) shall be sampled for Arsenic, cadmium, chromium, copper, cyanide, lead, mercury, nickel, selenium, silver, zinc, grain size, and total carbon annually. Sediment samples shall be composited from at least three replicates at each sampling station.

ATTACHMENT D

ATTACHMENT D

DEFINITION OF NO OBSERVED EFFECT LEVEL

No observed effect level (NOEL) for compliance determination is equal to IC_{25} or EC_{25}. If the IC_{25} or EC_{25} cannot be statistically determined, the NOEL shall be equal to the NOEC derived using hypothesis testing.

Effective concentration (EC) is a point estimate of the toxicant concentration that would cause an adverse effect on a quantal, "all or nothing," response (such as death, immobilization, or serious incapacitation) in a given percent of the test organisms. If the effect is death or immobility, the term lethal concentration (LC) may be used. EC values may be calculated using point estimation techniques such as probit, logit, and Spearman-Karber. EC_{25} is the concentration of toxicant (in percent effluent) that causes a response in 25% of the test organisms.

Inhibition Concentration (IC) is a point estimate of the toxicant concentration that would cause a given percent reduction in a non-lethal, non-quantal biological measurement, such as growth. For example, an IC_{25} is the estimated concentration of toxicant that would cause a 25% reduction in average young per female or growth. IC values may be calculated using a linear interpolation method such as EPA's Bootstrap Procedure.

No observed effect concentration (NOEC) is the highest tested concentration of an effluent or a toxicant at which no adverse effects are observed on the aquatic test organisms at a specific time of observation. It is determined using hypothesis testing.

TABLE D-1
CRITICAL LIFE STAGE TOXICITY TESTS FOR ESTUARINE WATERS

SPECIES	EFFECT	TEST DURATION	REFERENCE
alga (Skeletonema costatum) (Thalassiosira pseudonana)	growth rate	4 days	1
red alga (Champia parvula)	number of cystocarps	7-9 days	5
giant kelp (Macrocystis pyrifera)	percent germination; germ tube length	48 hours	3
abalone (Haliotis rufescens)	abnormal shell development	48 hours	3
oyster (Crassostrea gigas) mussel (Mytilus edulis)	abnormal shell development; percent survival	48 hours	2
Echinoderms (urchins - Strongylocentrotus purpuratus, S. franciscanus); (sand dollar - Dendraster excentricus)	percent fertilization	1 hour	4
shrimp (Mysidopsis bahia)	percent survival; growth; fecundity	7 days	5
silversides (Menidia beryllina)	larval growth rate; percent survival	7 days	5

TOXICITY TEST REFERENCES

1. American Society for Testing Materials (ASTM). 1990. Standard Guide for conducting static 96-hour toxicity tests with microalgae. Procedure E 1218-90. ASTM, Philadelphia, PA.

2. American Society for Testing Materials (ASTM). 1989. Standard Practice for conducting static acute toxicity tests with larvae of four species of bivalve molluscs. Procedure E 724-89. ASTM, Philadelphia, PA.

3. Anderson, B.B. J.W. Hunt, S.L. Turpen, A.R. Coulon, M. Martin, D.L. McKeown, and F.H. Palmer. 1990. Procedures manual for conducting toxicity tests developed by the marine bioassay project. California State Water Resources Control Board, Sacramento.

4. Dinnel, P.J., J. Link, and Q. Stober. 1987. Improved methodology for sea urchin sperm cell bioassay for marine waters. Archives of Environmental Contamination and Toxicology 16:23-32. and S.L. Anderson. September 1, 1989. Technical Memorandum. San Francisco Bay Regional Water Quality Control Board, Oakland, CA.

5. Weber, C.I., W.B. Horning, II, D.J. Klem, T.W. Neiheisel, P.A. Lewis, E.L. Robinson, J. Menkedick, and F. Kessler (eds.). 1988. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to marine and estuarine organisms. EPA-600/4-87/028. National Technical Information Service, Springfield, VA.

TABLE D-2
CRITICAL LIFE STAGE TOXICITY TESTS FOR FRESH WATERS

SPECIES	EFFECT	TEST DURATION	REFERENCE
fathead minnow (Pimephales promelas)	survival; growth rate	7 days	6
water flea (Ceriodaphnia dubia)	survival; number of young	7 days	6
alga (Selenastrum capricornutum)	cell division rate	4 days	6

TOXICITY TEST REFERENCE

6. Horning, W.B. and C.I. Weber (eds.). 1989. Short-term methods for estimating the chronic toxicity of effluents and receiving waters to freshwater organisms. Second edition. U.S. EPA Environmental Monitoring Systems Laboratory, Cincinnati, Ohio. EPA/600/4-89/001.

TABLE D-3
TOXICITY TEST REQUIREMENTS FOR STAGE ONE SCREENING PHASE

REQUIREMENTS	RECEIVING WATER CHARACTERISTICS		
	DISCHARGES TO COAST	DISCHARGES TO SAN FRANCISCO BAY‡	
	Ocean	Marine	Freshwater
Taxonomic Diversity	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish	1 plant 1 invertebrate 1 fish
Number of tests of each salinity type			
Freshwater†	0	1 or 2	3
Marine	4	3 or 4	0
Total number of tests	4	5	3

† The fresh water species may be substituted with marine species if:

1) the salinity of the effluent is above 5 parts per thousand (ppt) greater than 75% of the time, or

2) the ionic strength (TDS or conductivity) of the effluent at the test concentration used to determine compliance is documented to be toxic to the test species.

‡ Marine refers to receiving water salinities greater than 5 ppt at least 75% of the time during a normal water year. Fresh refers to receiving water with salinities less than 5 ppt at least 75% of the time during a normal water year.

ATTACHMENT E